**In the Claims**

The following Listing of Claims replaces all prior versions in the application:

LISTING OF CLAIMS

1. (Currently amended) A process for optimizing transmission speeds on a distributed transmission system which can support multiple upstream channels or logical channels simultaneously, comprising:

1) gathering data about each cable modem (CM) in a group of CMs coupled to a cable modem termination system (CMTS) through a distributed transmission system;

2) dividing said group of CMs up into logical groans based upon CM type and/or throughput ability;

3) creating an upstream channel or logical channel on said distributed transmission system for each logical group of CMs each upstream channel or logical channel having transmission characteristics optimized for a particular logical group of CMs;

4) assigning the CMs in each logical group to the upstream channel or logical channel created for that logical group; and

monitoring the error rate of transmissions from each CM, and if the error rate of any CM becomes higher than an underperformance limit or lower than ~~underperformance and~~ an overperformance ~~limits~~ limit, sending a message to said CM whose ~~bit~~ error rate has become too high or too low causing each said CM which is overperforming or underperforming to switch to an upstream channel with a burst profile which is compatible with the CM modem

type and suitable for more efficient communications of digital data between said CMTS and said CM.

2-24. (Canceled)

25. (Previously presented) The method of claim 1, wherein the error rate is the bit error rate.

26. (Previously presented) The method of claim 1, wherein the error rate is the byte error rate.

27. (Previously presented) The method of claim 1, wherein the error rate is the packet error rate.

28-31. (Canceled)

32. (Currently amended) A cable modem termination system (CMTS) configured to optimize transmission speeds on a distributed transmission system which can support multiple upstream channels or logical channels simultaneously, the CMTS implementing a process comprising:

~~A control computer programmed to carry out a process including:~~

1) gathering data about each cable modem (CM) in a group of CMs coupled to a cable modem termination system (CMTS) through a distributed transmission system;

2) dividing said group of CMs up into logical groups based upon CM type and/or throughput ability;

3) creating an upstream channel or logical channel on said distributed transmission system for each logical group of CMs each upstream channel or logical channel having transmission characteristics optimized for a particular logical group of CMs;

4) assigning the CMs in each logical group to the upstream channel or logical channel created for that logical group; and

monitoring the error rate of transmissions from each CM, and if the error rate of any CM becomes higher ~~or lower~~ than an underperformance limit or lower than an ~~and~~ overperformance ~~limits~~ limit, ~~respectively,~~ sending a message to said CM whose ~~bit~~ error rate has become too high or too low causing each said CM which is overperforming or underperforming to switch to an upstream channel with a burst profile which is compatible with the CM modem type and suitable for more efficient communications of digital data between said CMTS and said CM.

33. (Previously presented) The CMTS of claim 32, wherein the error rate is the bit error rate.

34. (Previously presented) The CMTS of claim 32, wherein the error rate is the byte error rate.

35. (Previously presented) The CMTS of claim 32, wherein the error rate is the packet error rate.